Technology Leadership
for Digital Cinema

CinePlayer

User Manual

The English version of this document is the only legally binding version.
Translated versions are not legally binding and are for convenience only.

Version 1.2

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Software License Agreement

The software license agreement can be found at the following location:
http://www.doremilabs.com/support/cinema-support/cinema-warranties/

1 Introduction

CinePlayer is a software based media player used to review Digital Cinema Packages (DCP) without the need for a digital cinema server.

1.1 System Requirements

CinePlayer software works on Windows XP Professional or Windows 7 and Mac OS X operating systems.

- Windows:
    - OS: XP, Vista, Windows 7
    - RAM: 1GB minimum – 4GB recommended
    - Intel Core 2 Duo minimum, Core i7 quad-core recommended
    - Graphics adapter with minimum 512MB dedicated memory

- MAC:
    - OS: 10.6.X and above
    - RAM: 1GB minimum – 4GB recommended
    - Intel Core 2 Duo minimum, Core i7 quad-core recommended
    - Graphics adapter with minimum 512MB dedicated memory

When using CinePlayer, for real time playback of 2K, 24fps DCP's with color conversion the following minimum configuration is recommended:

- CPU(s) with minimum 12 threads (12 physical cores or 6 cores with HT Technology)
- 4GB RAM
- Graphics adapter with minimum 1GB dedicated memory
- Fast local storage dedicated to DCP content (7200 RPM SATA III HDD or SSD)

Real time playback of any high frame rate, 3D, or 4K DCP’s cannot be guaranteed.

1.2 Graphics Adapter

Incompatibilities have been observed with some Intel integrated graphics drivers. For best performance, a dedicated graphics adapter is recommended.

1.3 Software Version

This manual pertains to software versions 6.4.x and higher.

1.4 Contact Information

If in need of help or assistance, please contact Doremi Labs Technical Services:

USA
24/7 Technical Services line: + **1-866-484-4004**
Technical Services Email: cinemasupport@doremilabs.com

Europe
24/7 Technical Services line: + **33 (0) 492-952-847**
Technical Services Link: http://support.doremitechno.org/ticketing

Japan
Technical Services line: + **044-966-4855**
Technical Services Email: support@doremilabs.co.jp

Australia ~ China ~ India ~ Indonesia ~ Korea ~ Malaysia ~ New Zealand ~ Philippines ~ Singapore ~ Taiwan ~ Thailand
Technical Services Email: supportasia@doremilabs.com

2 CinePlayer

CinePlayer is a software based media player used to review Digital Cinema Packages (DCP) without the need for a digital cinema server. CinePlayer can playback any DCP, not just those created by Doremi Mastering products. Both encrypted and un-encrypted DCPs are supported. In addition to playing DCPs, CinePlayer can also playback many popular video file types. For a list of codecs and file types supported by CinePlayer, see Section 5.

- Launching CinePlayer:
  - In the start menu, click on “CinePlayer” under the “Doremi Labs, CinePlayer” folder.

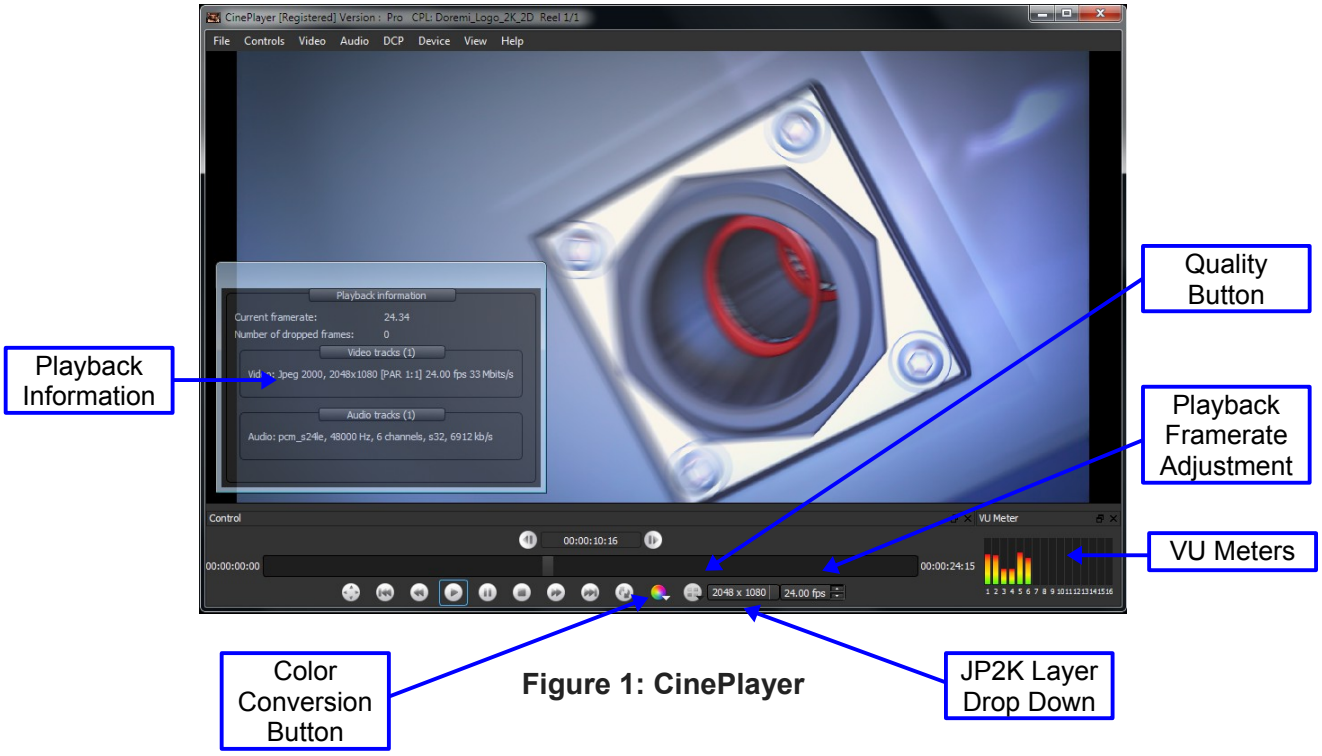

Figure 1: CinePlayer

- To open a DCP or file in CinePlayer, you can simply drag and drop a file or folder onto the player.
- In addition to drag and drop, files and folders can be opened by:
  - Going to the “File” menu and selecting “Open Media ...”
  - To open a DCP in the player, click the DCP radio button.
  - Then click the “...” button to browse for the parent folder of a DCP.
  - Then press OK to open the DCP for playback.
  - If the DCP is encrypted, you will be prompted to locate the KDM file.
  - Press the “...” button to browse for the KDM file and then press Ok to load it.

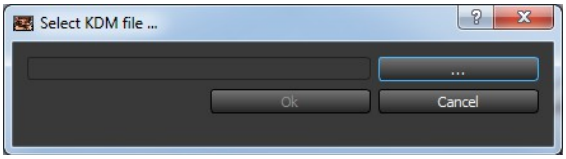

Figure 2: Select KDM Window

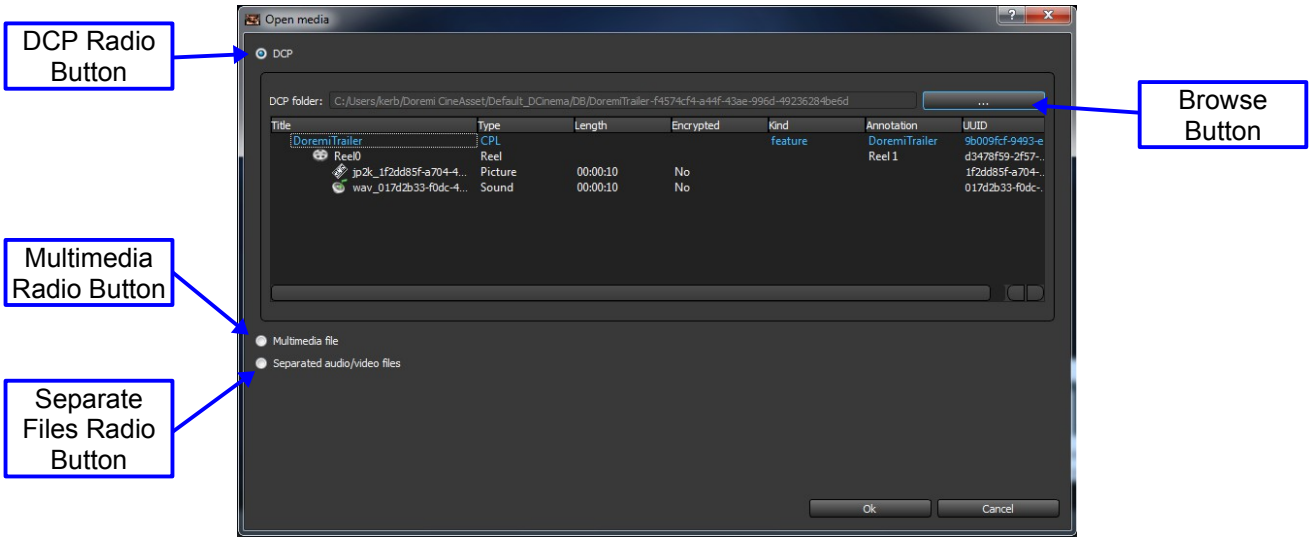

Figure 3: Open Media Window

- To open a video file for playback:
  - Click the “Multimedia file” radio button.
  - Click the “...” button to browse for a multimedia file.
  - Press the OK button to open the file for playback.
- To open individual audio and Video files for playback:
  - Click the “Separated audio/video files” radio button.
  - Click the “...” buttons to browse for audio and video files.
  - Press the OK button to open the files for playback.
- Once the DCP is open, XYZ' to RGB color conversion can be added by pressing the color conversion button and selecting “XYZ'/YCxCz to RGB” (see Figure 1).
- CinePlayer supports the multiple resolution layers of JPEG2000 encoded DCPs.
  - To select a different Layer, use the JP2K Layer drop down box (see Figure 1).
- The playback frame rate of the loaded file can be adjusted prior to playing the file.
  - To change the playback frame rate, enter the desired frame rate with the playback frame rate adjustment and press enter (see Figure 3).
- When playing back a 3D DCP, Side by Side mode can be initiated by (see Figure 4):
  - Going to the Video menu
  - Selecting 3D view
  - Selecting Side by Side

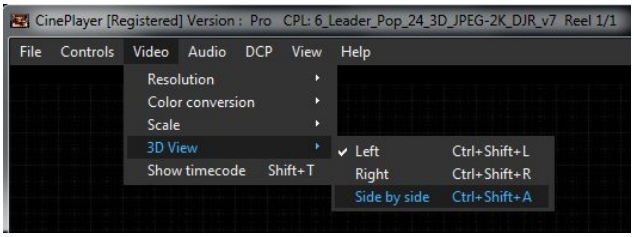

Figure 4: Side by Side 3D view

- For use with slower computers, CinePlayer includes a “Quality” setting. The “Quality” setting saves processing power by reducing the rendering quality. The “Quality” selection is from 10 (the best) to 1 (the least). The default setting is 5.
- To change the Quality setting, use the quality button (see Figure 1).

2.1.1 CinePlayer HD-SDI Output Support

CinePlayer version 6.4 and later supports certain Blackmagic Design DeckLink series cards for HD-SDI output. Specific performance depends on the host computer and full quality real-time playback is not guaranteed using these output cards.

2.1.1.1 Tested Configurations

CinePlayer currently supports and has been tested with **DeckLink HD Extreme 3D+** and **DeckLink 4K Extreme** PCIe models. Some sample configurations are listed below.

- Windows 7 – 6 core (Xeon X650 2.67Ghz) – 24gig RAM – Nvidia Quadro 2000 D (1GB RAM) – DeckLink 4K Extreme – SSD for media
  - This configuration is capable of playing 2D, 2K at 24fps with color conversion enabled to HD-SDI output without dropping frames (standard computer monitor output disabled).
- Mac Pro – 12 Core (dual 2.4 GHz Xeon) – 12GB RAM – Radeon HD5770 (1GB RAM) - DeckLink 4K Extreme – 2x SATA drives (RAID 0) for media
  - This configuration is capable of playing 2D, 1080P at 24fps with color conversion enabled to HD-SDI without dropping frames (standard computer monitor output disabled).

2.1.1.2 Using HD-SDI Output

When a supported card is seen by CinePlayer, it will be shown under the “Device” menu.

- To enable output through the HD-SDI card, simply select the desired card in the “Device” menu. (See Figure 5).

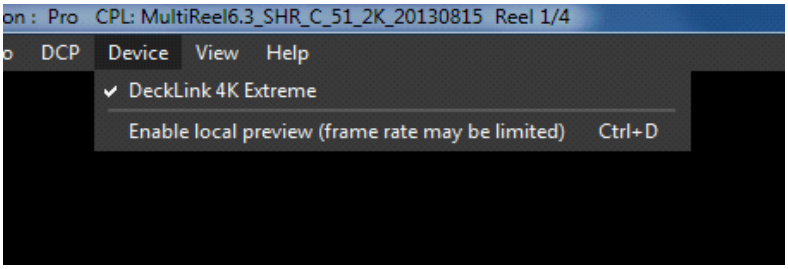
on : Pro CPL: MultiReel6.3_SHR_C_51_2K_20130815 Reel 1/4
DCP Device View Help
DeckLink 4K Extreme
Enable local preview (frame rate may be limited) Ctrl+D

Figure 5: Device Menu

- In order to maximize performance, CinePlayer gives three playback options:
  - Only play to the HD-SDI output
  - Only play to the standard computer monitor
  - Play to both the standard computer monitor and the HD-SDI output
- To disable playback to the standard computer monitor for improved performance, go to the "Device" menu and un-check "Enable local preview" (see Figure 5).

2.1.2 CinePlayer Options

There are four main user preferences that can be used to change the way CinePlayer behaves.

- To adjust the default behavior of CinePlayer, go to the File menu and select Options. The Options window will appear (see Figure 6).

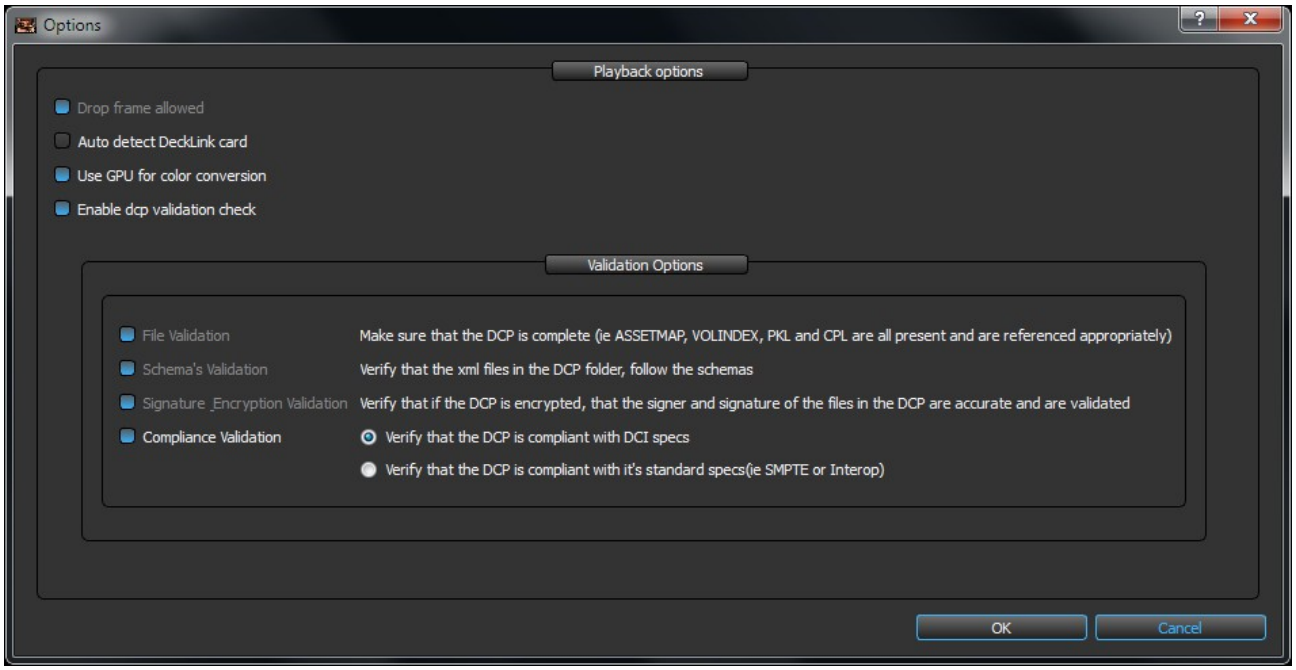
Options
Playback options
Drop frame allowed
Auto detect DeckLink card
Use GPU for color conversion
Enable dcp validation check
Validation Options
File Validation
Make sure that the DCP is complete (ie ASSETMAP, VOLINDEX, PKL and CPL are all present and are referenced appropriately)
Schema's Validation
Verify that the xml files in the DCP folder, follow the schemas
Signature _Encryption Validation
Verify that if the DCP is encrypted, that the signer and signature of the files in the DCP are accurate and are validated
Compliance Validation
Verify that the DCP is compliant with DCI specs
Verify that the DCP is compliant with it's standard specs(ie SMPTE or Interop)
OK
Cancel

Figure 6: CinePlayer Options Window

- CinePlayer can be set to drop frames in the attempt to play a file in real time.
  - Select “Drop frame allowed” to enable this.
  - When un-checked, CinePlayer will play every frame available. In this case, if system performance is low, the playback could be slower than real-time.
- CinePlayer can be configured to not automatically detect the DeckLink I/O card.
  - When the DeckLink I/O card is not being used, un-check "Auto detect DeckLink card". This will improve performance when playing a file directly to the computer monitor
  - Select the "Auto detect DeckLink card" option when the DeckLink I/O card will be used.
- CinePlayer can also be set to run a validation check on each DCP that is loaded.
  - Select “Enable dcp validation check” to turn on this feature.
  - When selected, the validation options will appear. See Section 3.2 for more details on the CineInspect validation options.
  - When un-checked, CinePlayer will not run a validation check each time a DCP is loaded for playback.
- By default, CinePlayer is configured to use the graphic adapters GPU when performing color conversion. If there is an issue with playback when color conversion is enabled, GPU support can be disabled. For example, Mac OS X 10.6 does not support the use of GPU for color conversion in CinePlayer.
  - To disable GPU color conversion, uncheck "Use GPU for color conversion".

2.2 CinePlayer Installation

2.2.1 Windows

- Launch installer executable (CinePlayer-6.2.x.exe) and you will see the setup window as shown in Figure 7.

CinePlayer 6.1.13 Setup
CinePlayer
Welcome to the CinePlayer 6.1.13 Setup Wizard
This wizard will guide you through the installation of CinePlayer 6.1.13.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
doremi
Technology Leadership for Digital Cinema
Next >
Cancel

Figure 7:

- Click “Next” to continue.
- You will see the license agreement window as shown in Figure 8.

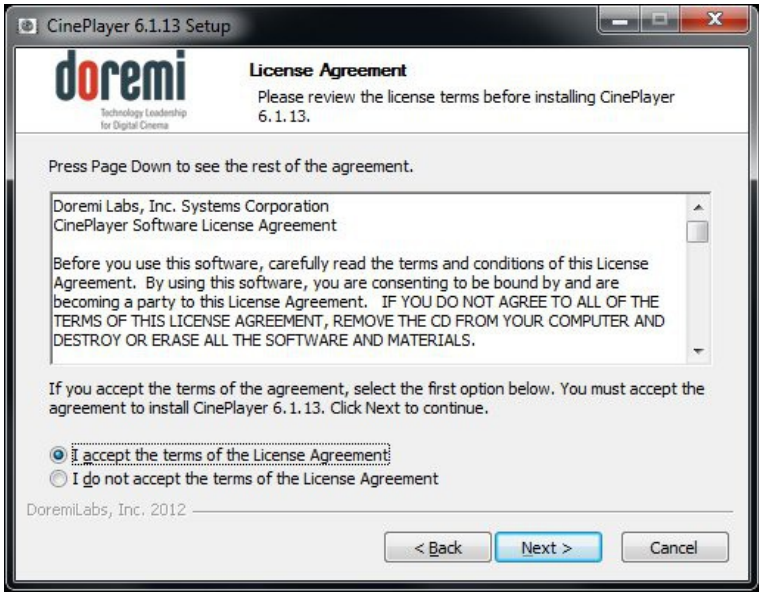
CinePlayer 6.1.13 Setup
License Agreement
Please review the license terms before installing CinePlayer 6.1.13.
Press Page Down to see the rest of the agreement.
Doremi Labs, Inc. Systems Corporation
CinePlayer Software License Agreement
Before you use this software, carefully read the terms and conditions of this License Agreement. By using this software, you are consenting to be bound by and are becoming a party to this License Agreement. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THIS LICENSE AGREEMENT, REMOVE THE CD FROM YOUR COMPUTER AND DESTROY OR ERASE ALL THE SOFTWARE AND MATERIALS.
If you accept the terms of the agreement, select the first option below. You must accept the agreement to install CinePlayer 6.1.13. Click Next to continue.
I accept the terms of the License Agreement
I do not accept the terms of the License Agreement
DoremiLabs, Inc. 2012
< Back
Next >
Cancel

Figure 8:

- Once you've read the license agreement, select "I accept the terms of the License Agreement" and then click "Next" to continue.
- You will see the install location window as shown in Figure 9.

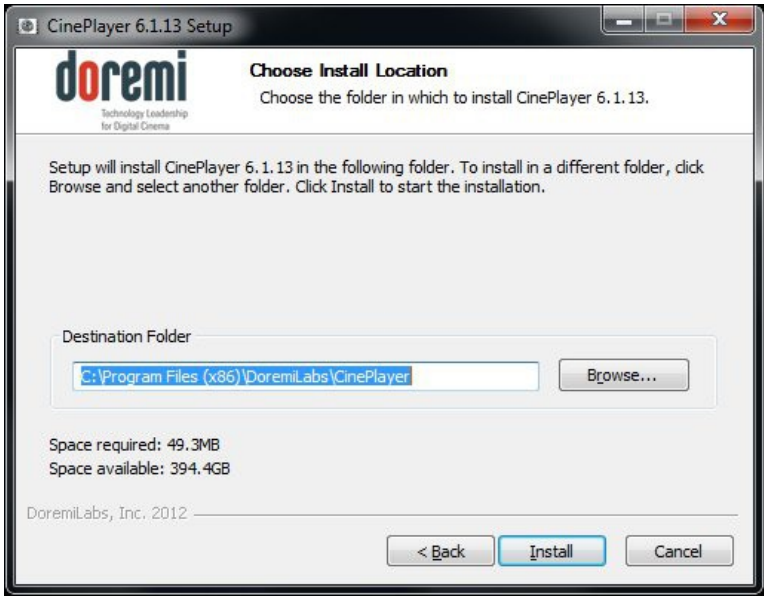
CinePlayer 6.1.13 Setup
Choose Install Location
Choose the folder in which to install CinePlayer 6.1.13.
Setup will install CinePlayer 6.1.13 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files (x86)\DoremiLabs\CinePlayer
Browse...
Space required: 49.3MB
Space available: 394.4GB
DoremiLabs, Inc. 2012
< Back
Install
Cancel

Figure 9:

- Leave the default install folder or choose a different install folder, if necessary. Then click "Install" to begin the installation.
- During the installation you will see the progress screen as shown in Figure 10.

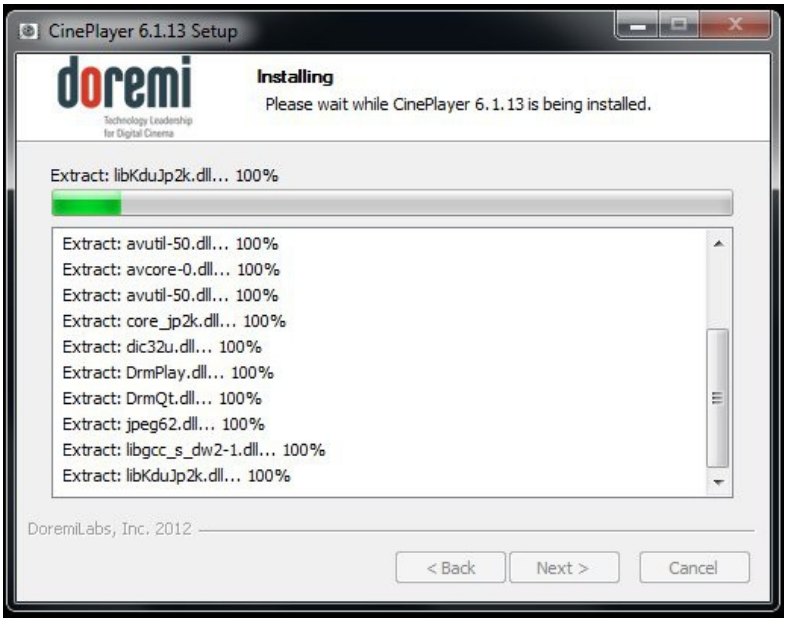

Figure 10:

- When the installation is complete, you will see the completion window as shown in Figure 11.

Figure 11:

- Select “Run CinePlayer” if you would like to launch CinePlayer as soon as the install is finished. Select “Associate mxf files to CinePlayer” if you would to use CinePlayer as the default application for all mxf file playback.
- Click “Finish” to complete the installation.
- If you have received the CinePlayer dongle, plug it into a free USB port on your machine prior to launching CinePlayer.
- If you have not received your CinePlayer dongle, you will receive the error shown in Figure 12 when launching the application.

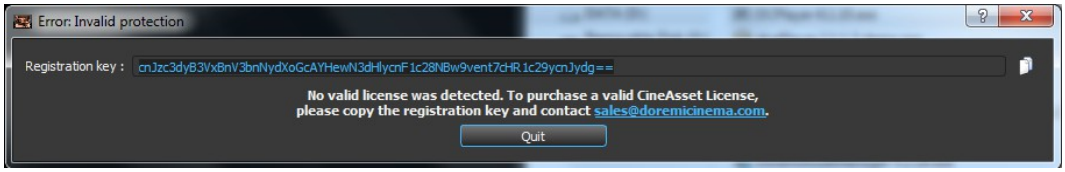
Error: Invalid protection
Registration key :
cnJzc3dyB3VxBnV3bnNydXoGcAYHewN3dHlycnF1c28NBw9vent7cHR1c29ycnJydg==
No valid license was detected. To purchase a valid CineAsset License,
please copy the registration key and contact sales@doremicinema.com.
Quit

Figure 12:

- Send the registration key listed here to sales@doremilabs.com to request a temporary license, so that you may use the software while waiting for your dongle to arrive.

3 CineInspect

CineInspect is a new tool included with CinePlayer 6.4 or later. CineInspect is used to validate DCP files according to a number of tests designed to verify the DCP's integrity. CineInspect allows the user to choose from various validation levels to inspect unencrypted or encrypted DCP's created by anyone. It then output's a set of log messages specifying the tests performed and the results obtained from the inspection (Pass, Fail or Warning). CineInspect can also be run from the command line to accommodate automated workflows.

3.1 CineInspect Integration

CineInspect can be launched and used in several different ways.

- From the start menu, CineInspect can be launched by clicking on "CineInspect" under the Doremi Labs, CinePlayer folder.
- From a command line interface, CineInspect can be executed with various different options. For Command line options and usages, see Section 4.2.
- From within CinePlayer:
    - CineInspect can be run from the File menu of CinePlayer.
    - When a file is loaded in CinePlayer, CineInspect can be run from the DCP > Send to CineInspect menu.
    - The CineInspect validation check can run automatically on any DCP folder dropped or opened in CinePlayer (this can be enabled or disabled from the File > Options menu of CinePlayer).

When launched, the main CineInspect window will appear. The CineInspect window is used to select the desired settings and display the results of the inspection.

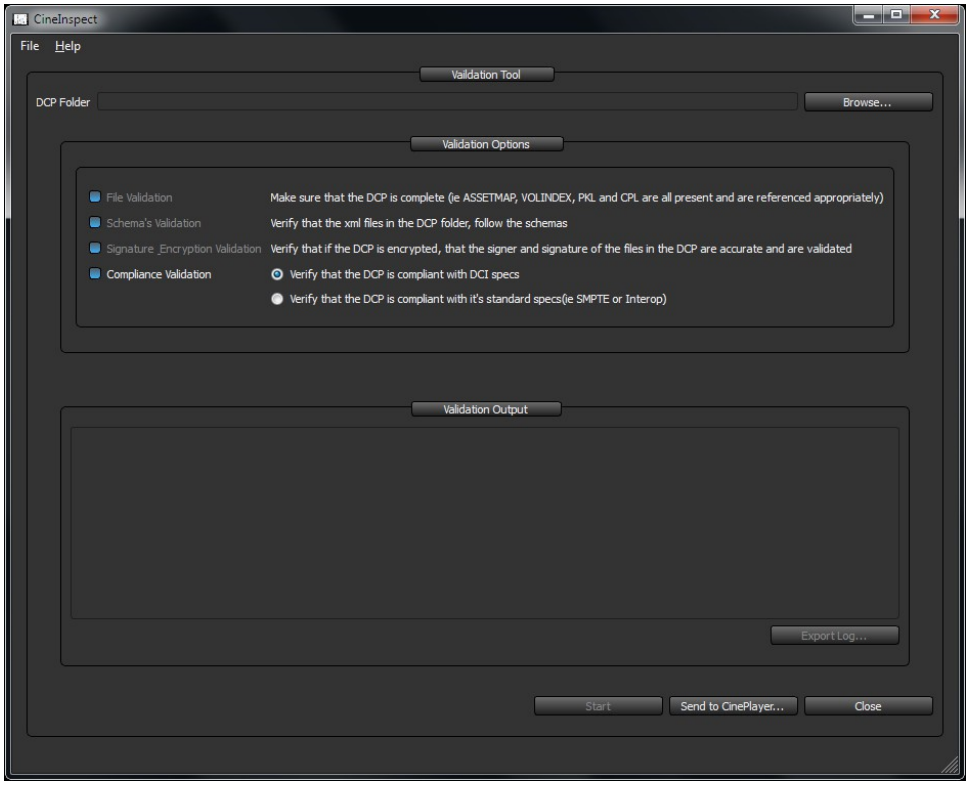
CineInspect
File Help
Validation Tool
DCP Folder
Browse...
Validation Options
File Validation
Make sure that the DCP is complete (ie ASSETMAP, VOLINDEX, PKL and CPL are all present and are referenced appropriately)
Schema's Validation
Verify that the xml files in the DCP folder, follow the schemas
Signature _Encryption Validation
Verify that if the DCP is encrypted, that the signer and signature of the files in the DCP are accurate and are validated
Compliance Validation
Verify that the DCP is compliant with DCI specs
Verify that the DCP is compliant with it's standard specs(ie SMPTE or Interop)
Validation Output
Export Log...
Start
Send to CinePlayer...
Close

Figure 13: CineInspect

3.2 CineInspect Interface

The CineInspect interface is made up of 3 sections: Validation Tool, Validation Options and Validation Output (see Figure 13).

3.2.1 Validation Tool

- Under the Validation Tool, there is a Browse button that allows the user to navigate to the desired DCP to be tested.
- A DCP folder can also be dragged and dropped onto the Validation Tool to be loaded for inspection.

3.2.2 Validation Options

The Validation Options section allows the user to select what level of validation they wish to perform on a given DCP. CineInspect splits the validation inspection into various levels. Each step, starting with step 1, validates the minimal required tests to verify the validity of the DCP.

As the selected levels increase, the previous level will automatically be chosen as it is required to perform more in-depth tests.

This leaves step 4 to be the most time consuming test to validate and the most efficient in determining the integrity of the chosen DCP.

- File Validation (Step 1)
    - Verifies if the chosen DCP has all the files required to make a valid DCP and verifies that the files have not been tampered with (size verification).
- Schema's Validation (Step 2)
    - Verifies all the .xml files in the chosen DCP to validate against their corresponding schemas, according to the standard of the DCP (SMPTE or Interop).
- Signature Encryption Validation (Step 3)
    - Verifies the integrity of the signatures present in the XML files
- Compliance Validation (Step 4)
    - DCI Specification
        - Runs a number of tests specified in the DCI spec, to verify that the chosen DCP follows such standardization.
        - Valid only for SMPTE packages.
    - Standard Specification
        - Runs a number of tests to verify that the chosen DCP follows the spec of the standard of the DCP (either SMPTE or Interop).

3.2.3 Validation Output

The Validation Output displays a detailed set of log messages specifying the tests performed and the results obtained from the inspection. The messages are categorized as Pass, Fail or Warning. It also shows a summary of the total number of tests that passed, tests that failed or tests that show warnings.

- **Pass** indicates the tested aspect of the DCP is within specification.
- **Fail** indicates the tested aspect of the DCP is not within specification and will likely cause problems with other DCP software or digital cinema players.
- **Warning** indicates the tested aspect of the DCP is not within specification but is not likely to cause problems with other DCP software or digital cinema players.

The log information can also be exported as a text file. The log is automatically named according to the current date and content title text of the CPL. Alternately, a manual name can be entered for the exported file.

The “Send to CinePlayer” button can be used to open the DCP in CinePlayer for visual review.

4 Command Line Tools

CinePlayer and CineInspect can also be used from the command line to playback and validate DCPs. This section explains the command line syntax for CinePlayer and CineInspect.

4.1 CinePlayer

CinePlayer.exe is installed in C:\Program Files\DoremiLabs\CinePlayer.

4.1.1 Syntax

CinePlayer.exe [input file 1] [input file 2] {-fullscreen}

4.1.1.1 Input Files

- The maximum number if input files is two. If two input files are specified, only the audio track will be taken from “input file 1” and only the video track will be taken from “input file 2”.
- An input file can be a video or audio file of any format supported by CineAsset.
- An input file can also be a folder containing DCP files or a folder containing an Image Sequence.

4.1.1.2 Fullscreen

When the full-screen switch is present, CinePlayer will open in full-screen mode.

4.1.2 Examples

- CinePlayer.exe G:\audio.wav G:\video.ts -fullscreen

Example 1 will open audio.wav and video.ts in CinePlayer for playback. The application will open in full-screen mode.

- CinePlayer.exe G:\Example_DCP\ -fullscreen

In example 2, “Example_DCP” is a folder containing DCP files. This example will open the DCP from folder “Example_DCP” for playback in full-screen mode.

4.2 CineInspect

4.2.1 Syntax

CineInspect.exe <command> [dcpFolderDir] [validation_level] start [outputfile]

4.2.2 Commands

- -show: Show the validation tool.
- -hide: Hide the validation tool.

4.2.3 Options

- dcpFolderDir:
    - Is the destination folder of the DCP that you want to inspect
- validation_level
    - 1=File Validation

    - 2=Schema's Validation
    - 3=Signature Encryption Validation
    - 4=Compliance with DCI spec Validation
    - 5=Compliance with Standard (SMPTE or Interop) spec Validation
- Start
    - is optional and is only valid when command == show
    - If not present, then show the gui and do not start the validation
    - If present, then show the gui and start validation automatically
- Outputfile
    - Is optional and is only valid when command == hide. It is the destination path file name.
    - If not present, then hide the gui and output the log to the standard output window
    - If present, then hide the gui and output the log to the specified output file

Note: Make sure when entering a location to include it in "" so spaces will be counted for.

4.2.4 Examples

1. CineInspect.exe -show G:/Mpeg2_Interop_UnEncrypted 3
2. CineInspect.exe -show G:/Mpeg2_Interop_UnEncrypted 3 start
3. CineInspect.exe -hide G:/Mpeg2_Interop_UnEncrypted 45
4. CineInspect.exe -hide G:/Mpeg2_Interop_UnEncrypted 5 G:/temp/test_log
5. CineInspect.exe -hide G:/Mpeg2_Interop_UnEncrypted 5 G:/temp/test_log.txt
6. CineInspect.exe -hide G:/Mpeg2_Interop_UnEncrypted 5 G:/temp/test_log.xml

Example 1 will show the Inspection Validation GUI and will set the DCP path to G:/Mpeg2_Interop_UnEncrypted and the validation level to Signature Encryption Validation.

Example 2 will show the Inspection Validation GUI and will set the DCP path to G:/Mpeg2_Interop_UnEncrypted and the validation level to Signature Encryption Validation and will start the validation process automatically.

Example 3 will hide the Inspection Validation GUI and will automatically set the DCP path to G:/Mpeg2_Interop_UnEncrypted and the validation level to Compliance with std spec Validation and will start the validation process automatically and output the log to the standard output.

Example 4 will hide the Inspection Validation GUI and will automatically set the DCP path to G:/Mpeg2_Interop_UnEncrypted and the validation level to Compliance with std spec Validation and will start the validation process automatically and output the log to the test_log (if no extension is given the output file format is automatically considered to be a .txt file format).

Example 5 will hide the Inspection Validation GUI and will automatically set the DCP path to G:/Mpeg2_Interop_UnEncrypted and the validation level to Compliance with std spec Validation and will start the validation process automatically and output the log to the test_log.txt (this will output to .txt file format).

Example 6 will hide the Inspection Validation GUI and will automatically set the DCP path to G:/Mpeg2_Interop_UnEncrypted and the validation level to Compliance with std spec Validation and will start the validation process automatically and output the log to the test_log.xml (this will output to .xml file format).

5 CinePlayer Supported File Formats and Codec's

This section provides a list of file formats supported by the CinePlayer application.

5.1 Supported Codec's

- ProRes-422
- DnxHD®
- YUV Uncompressed 8-10 bits
- DIVX®, XVID®, MPEG4 AVC/H-264
- VC-1
- MPEG1, MPEG2, Matrox MPEG2
- DVCPRO HD, DVCPRO 25/100
- Photo JPEG, MJPEG-A&B
- DV
- and many more...

5.2 Supported Containers

- AVI
- MOV
- MXF
- MPG
- TS
- EVO
- WMV
- M2TS
- and many more...

5.3 Supported Image Format

- BMP
- TIFF
- TARGA
- JPG
- DPX
- and many more...

5.4 Supported Audio Format

- WAV
- AAC
- AIFF
- PCM
- and many more...

6 Acronyms

Term	Definition
DCP	Digital Cinema Package
DCNC	Digital Cinema Naming Convention
JPEG	Joint Photographic Experts Group
JP2K	JPEG2000
MPEG	Moving Pictures Experts Group
UUID	Universally Unique Identifier
WAV	Waveform Audio File Format
XML	Extensible Markup Language

7 Document Revision History

Date	Version	Description
11/29/2012	1.0	First version.
11/22/2013	1.1	Updated procedure for software version 6.4.x.
12/13/2013	1.2	Updated Section 2.1.2.